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EXAMINER

CASCHERA, ANTONIO A

ART UNIT

PAPER NUMBER

2697

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Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/713,492

Applicant(s)

JUNGREIS ET AL.

Examiner

Antonio A Caschera

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 and 26-32 is/are rejected.
- 7) ☒ Claim(s) 25 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 09 June 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as failing to set forth the subject matter which applicant(s) regard as their invention. Evidence that claim 8 fail(s) to correspond in scope with that which applicant(s) regard as the invention can be found in original specification filed 11/15/00. In that paper, applicant has stated, “a nul step does not perform a function...” (see page 9, lines 29-30), and this statement indicates that the invention is different from what is defined in the claim(s) because claim 8 discloses the nul step to instigate regeneration however such a nul operation is widely known in the computer art to pertain to a, “wait” cycle where no processing is performed for a certain amount of time.

2. Claim 23 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In reference to 23, claim 23 recites limitations directed towards a nul step in the method of propagating changes made to a design model. Claim 23 specifically states a nul step whose execution does not effect the model which is contradictory to claim 8 which is discussed above. The specification does state that, “a nul step does not perform a function when it is executed, “ (see page 9, lines 29-30) however again, such a limitation is conflicting to the limitation of claim 8.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3, 6-14, 16-21, 23, 24, 26, 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatanaka (U.S. Patent 5,923,573). (Note further explanation pertaining to the rejections of these claims may refer to remarks found in the ***Response to Arguments***, paper no. 8).

In reference to claims 1 and 18, Hatanaka discloses modifying a “kit model” of a three-dimensional CAD system having elements such as points, curved lines and curved surfaces (see column 2, lines 7-18). Hatanaka also discloses identifying a change in an element by receiving modification information for moving or changing an element (see column 2, lines 30-32). Note, in reference to pages 10-12, specifically page 11, 2<sup>nd</sup> paragraph of applicant’s remarks, applicant argues that Hatanaka does not teach, “creating a first step,” or teach the particular use of the relationship information as disclosed in claims 1 and 18. The office disagrees as the relationship data of Hantanka is utilized for model regeneration as it is used in supplying a generating method to the model regeneration function (see columns 7-8, lines 66-3). Therefore the limitation of claim 1, “...creating a first step...” is interpreted as the supplying or creation of a generating method, disclosed by Hantanka, as the generation method is defined based upon the relationship data. Further, claim 1 does not specifically point out the exact operation or use of the, “first step” and solely discloses the “first step” being based upon

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the structure of the first element or on a relationship between the first element and another element or elements. Hatanaka also discloses when points, curved lines and curved surfaces of the model are moved or changed, other graphic elements which relate to the changed element are also modified (see column 7, lines 28-52). Note that the office believes that in using such related elements as in Hatanaka, it would have been obvious to one of ordinary skill in the art at the time the invention was made to change one or more elements to produce a model that accurately reflected the change to a first element because related modified elements would cause other related elements to also be changed. Hatanaka does not explicitly disclose creating a, "second step" based on the first step and the structure of one of the elements or the relationship between two of the elements however, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement a second step creation in the three dimensional modeling apparatus of Hatanaka in order to provide for other related elements to be modified which are based on the modification from the first created step and because since the same basic functions as claimed is shown by Hatanaka, it is substantially a matter of designating this as a separate step. Note, in reference to pages 10-12, specifically page 11, 3<sup>rd</sup> paragraph of applicant's remarks, applicant argues that Hatanaka does not teach claim 1/18's recitation regarding a, "second step." As mentioned above, the office acknowledges Hatanaka's lack of support for such a limitation however, Hatanaka does disclose that when points, curved lines and curved surfaces of the model are moved or changed, other graphic elements which relate to the changed element are also modified (see column 7, lines 28-52). Therefore in view of the above disclosed limitation of Hatanaka, the office interprets the creation of a, "second step" based on a,

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“first step” and the structure of one of the elements or on a relationship between two of the elements to be inherit with the model regeneration function of Hantanka as relationship data is used to supply multiple generation methods which could be based on previously modified elements or previous generation methods. Again, claims 1 and 18 do not specifically point out the exact operation or use of the, “second step” and solely discloses the “second step” being based upon the, “first step” and the structure of one of the elements or on a relationship between two of the elements. Further, the applicant also asserts claims 1 and 18 to recite, “...the creation of the steps together, followed by the execution of each respective step after it has been created (see page 11, 3<sup>rd</sup> paragraph) however the office does not believe claims 1 and 18 to particularly point out such a limitation as the claim solely discloses the creation of two steps and then the later execution of the steps and does not recite the limitation of the two steps being created together.

In reference to claims 2 and 19, Hatanaka discloses all of the claim limitations as applied to claim 1 above. Hatanaka discloses modifying a “kit model” of a three-dimensional CAD system having elements such as points, curved lines and curved surfaces (see column 2, lines 7-18).

In reference to claim 3, Hatanaka discloses all of the claim limitations as applied to claim 2 above however Hatanaka does not explicitly disclose the kit models being of an architectural structure however it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the three dimensional CAD system with many types of models including architectural models as this is a standard use for a CAD system.

In reference to claim 6, Hatanaka discloses all of the claim limitations as applied to claim 1 above. Although Hatanaka discloses the generation relationship data to be included in an element's data structure (see column 7, lines 57-61), Hatanaka does not explicitly disclose it being stored in a repository. It would have been obvious to one of ordinary skill in the art at the time the invention was made to store the steps in a sort of memory or repository in order to repeat execution of the steps at a later time. Note, in reference to page 12, 4<sup>th</sup> paragraph of applicant's remarks, applicant argues that Hatanaka does not teach the storing of steps in a step repository. As mentioned above, the office acknowledges Hatanaka's lack of support for such a limitation however, in view of the above arguments directed towards the, "first step," the office believes the, "step repository" of claim 6 to be substantially similar in functionality to a sort of memory allowing for the save and retrieval of steps in order to execute the steps over again in the future. The generation method of Hatanaka must be stored in some sort of memory in order for the model regeneration function to utilize its data further while naming the memory a certain way does not change its overall functionality and use.

In reference to claim 7, Hatanaka discloses all of the claim limitations as applied to claim 1 above. Hatanaka does not explicitly disclose one of the steps of claim 1 being a nul step however, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement a nul step within the three dimensional modeling apparatus of Hatanaka in order to act as a, "wait" command allowing the processor to idle regeneration for a certain amount of time, which is well known in the computing art especially in computer programming.

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In reference to claim 8, Hatanaka discloses all of the claim limitations as applied to claim 7 above. Although, Hatanaka does disclose regeneration of an object after an element is modified (see column 8, lines 62-65), Hatanaka does not explicitly disclose a nul step instigating regeneration. It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement a nul step instigating regeneration within the three dimensional modeling apparatus of Hatanaka in order to rebuild the view of a model if the user canceled a step of modification so that the previously unmodified element maybe seen again. Note such a feature is commonly found in much of today's software in the form of an "undo" command. Further, the nul step instigating regeneration is also broadly interpreted as a, "refresh" command whereby the display screen is redrawn which is well known in the computer graphics art.

In reference to claims 9 and 17, Hatanaka discloses all of the claim limitations as applied to claim 1 above in addition, Hatanaka discloses each element having geometric shape data for specifying graphic elements (see column 7, lines 57-65). Note the office believes the applicant's atom feature to be substantially the same as the geometric shape data found in the prior art of Hatanaka. Hatanaka also discloses geometric shape data expressing a dependency between generation relationship data when geometric shape data is re-calculated by using information of the generation relationship data (see column 8, lines 6-8). Hatanaka does not explicitly disclose marking changes made to an element however it would have been obvious to one of ordinary skill in the art at the time the invention was made to mark changes made to an element by saving them as new geometric shape data in order to perform further modifications based upon prior



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modifications. Note, in reference to page 13, 2<sup>nd</sup> paragraph of applicant's remarks, applicant argues that Hatanaka does not teach the marking of changes to an element, expressing a dependency between steps or links an element to a step. As mentioned above, the office acknowledges Hatanaka's lack of support for such limitations however, the office believes the applicant's atom feature to be substantially similar to the geometric shape data found in the prior art of Hatanaka. Hatanaka also discloses geometric shape data expressing a dependency between generation relationship data when geometric shape data is re-calculated by using information of the generation relationship data (see column 8, lines 6-8). Therefore, the office interprets marking changes to an element to be inherit to the model regeneration function of Hatanaka as the methods of Hatanaka must somehow keep track of the changes made to the elements therefore some sort of marking or flagging of changes would have been obvious to one of ordinary skill in the art at the time the invention was made. A simple but relevant example is the marking of, "linked cells" in a spreadsheet environment where a change to one of the cells leads to a corresponding change in the other.

In reference to claim 10, Hatanaka discloses all of the claim limitations as applied to claim 1 above. Hatanaka discloses when points, curved lines and curved surfaces of the model are moved or changed, other graphic elements which relate to the changed element are also modified (see column 7, lines 28-52). Note that the office interprets these other graphic elements, which are related to the modified element, to represent a class of elements. Note, in reference to page 13, 2<sup>nd</sup> paragraph of applicant's remarks, applicant argues that Hatanaka does not teach a, "second step" let alone the "second step" depending upon a relationship between a first element and a class of elements. In view of

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the above response for claim 1, since Hatanaka does disclose that when points, curved lines and curved surfaces of the model are moved or changed, other graphic elements which relate to the changed element are also modified (see column 7, lines 28-52), the office interprets such a dependency to apply to each, regeneration method defined by the relationship data.

In reference to claim 11, Hatanaka discloses all of the claim limitations as applied to claim 1 above in addition, Hatanaka discloses executing a geometry step on a structure by offsetting particular points of the structure (see Figure 16) using an F node which is associated to geometric relationship data (see column 13, lines 13-15 and column 8, lines 13-16). Note, in reference to page 14, 1<sup>st</sup> paragraph of applicant's remarks, applicant argues that Hatanaka does not teach, the execution of geometry steps that are associated with the first step or the second step. Hatanaka does disclose the F node structure utilized by a regeneration operation unit which sets coordinate values of points based on the F node (see column 13, lines 15-27). Therefore the office interprets the regeneration operation unit to perform the geometry steps dependent upon F node data which is associated with geometric relationship data (see column 8, lines 13-16).

In reference to claims 12 and 24, Hatanaka discloses all of the claim limitations as applied to claims 1 and 18, respectively above in addition, Hatanaka discloses geometric relationship data for each element containing an F node which includes a lock flag indicating whether or not the relationship data is locked (see column 8, lines 17-20). Note that Hatanaka does not explicitly disclose that a locked F node prevents execution however it is well known in the art that locked data is inaccessible thus disallowing the execution of code utilizing the data. Note, in reference to page 14, 2<sup>nd</sup> paragraph of

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applicant's remarks, applicant argues that Hatanaka does not teach a locked step. The office interprets the locked flag of the F node to lock geometric relationship data which is further utilized in the generation method, further discussed above in reference to claim 1, therefore ultimately locking the step since data used by the step is not available.

In reference to claim 13, Hatanaka discloses all of the claim limitations as applied to claim 1 above, however Hatanaka does not explicitly disclose generating an error signal if the first step or second step cannot be sorted. It would have been obvious to one of ordinary skill in the art at the time the invention was made to generate an error signal to inform the modeling system and the user of the modeling system that due to unsorted steps, elements found in the model may not be generated correctly in orientation, dimension or position. Note, in reference to page 14, 2<sup>nd</sup> paragraph of applicant's claim, applicant argues that no *prima facie* case for a rejection has been made. The office asserts that the generation of error signals if steps cannot be sorted would have been obvious to one of ordinary skill in the art because these steps provide essential information as to how elements are related therefore not sorting data would provide for an erroneous output or would execute redundant modeling steps. Further, generating an error signal to alert the system and/or user of such a condition is crucial and is well known in the art. Such examples of generating error signals are: displaying an error signal when performing file operations in the Windows operating system and setting overflow flags representing errors in arithmetic processing using hardware devices.

In reference to claim 14, Hatanaka discloses modifying a "kit model" of a three-dimensional CAD system having elements such as points, curved lines and curved surfaces (see column 2, lines 7-18). Hatanaka discloses a kit model modification routine

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receiving element modification information and checking all elements that are effected by a modification to the element by observing a "Used list," (see column 9, lines 13-17 and 34-40). Hatanaka also discloses executing the modification of the element through the use of a model regeneration function (see column 7, lines 28-32). Note the office interprets the kit model modification routine of Hatanaka as applicant's step propagator and the model regeneration function as applicant's step executor. Also, although Hatanaka does not explicitly disclose creating a second step based on the first step and the structure of one of the elements or the relationship between two of the elements, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement a second step creation in the three dimensional modeling apparatus of Hatanaka in order to provide for other related elements to be modified which are based on the modification from the first created step. Note, in reference to page 15, 2<sup>nd</sup> paragraph of applicant's remarks, applicant argues that Hatanaka does not teach two separate steps that can be executed to regenerate a design model. See the response to claims 1 and 18 above as claim 14 is the independent system similar in scope to these claims.

In reference to claim 16, Hatanaka discloses all of the claim limitations as applied to claim 14 above in addition, Hatanaka discloses a data area storing a model consisting of elements, curved lines, data points and curved surfaces (see column 3, lines 20-24). Note the office interprets the applicant's element table to be found within a data area such as disclosed by Hatanaka.

In reference to claim 20, Hatanaka discloses all of the claim limitations as applied to claim 18 above. Hatanaka also discloses when points, curved lines and curved

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surfaces of the model are moved or changed, other graphic elements which relate to the changed element are also modified (see column 7, lines 28-52). Hatanaka does not explicitly disclose creating a, "second step" effecting changes to the same element or based on the first step however, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement a second step creation in the three dimensional modeling apparatus of Hatanaka which is based on the first step in order to provide for other related elements to be modified which are based on the modification from the first created step and because since the same basic functions as claimed is shown by Hatanaka, it is substantially a matter of designating this as a separate step. It also would have been obvious to one of ordinary skill in the art at the time the invention was made to implement a "second step" on the same element as a first step was preformed in order to apply further modifications to an element of a design which is a standard function performed in a CAD system. In reference to page 14, 2<sup>nd</sup> paragraph of applicant's remarks, applicant argues that no *prima facie* case for a rejection has been made. The office asserts that since Hatanaka discloses that when points, curved lines and curved surfaces of the model are moved or changed, other graphic elements which relate to the changed element are also modified (see column 7, lines 28-52) along with the well known technique of storing "steps" to modify an object in a memory, it would have been obvious to one of ordinary skill in the art at the time the invention was made to select a, "second step" from a plurality of steps to effect changes on an element where the, "second step" is selected from a plurality of steps based on the, "first step" as many graphics processing programs allow for altering of images by applying filtering techniques, selected from many filters, which, when applied one after the next, must

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process previously filtered or altered data. The technique of propagating changes to an object by selecting from a plurality of steps which maybe based on previous altering steps is well known in the art and therefore would have been obvious to one of ordinary skill in the art.

In reference to claim 21, Hatanaka discloses all of the claim limitations as applied to claim 20 above. Hatanaka does not explicitly disclose creating a, "second step" selected from a plurality of steps based on the creation of other steps however, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement such a second step creation in the three dimensional modeling apparatus of Hatanaka in order to provide a continuing modification of elements based upon a plurality of prior changes performed by the creation of previously generated steps which is a standard function performed in a CAD system.

In reference to claim 23, Hatanaka discloses all of the claim limitations as applied to claim 18 above. Hatanaka does not explicitly disclose a nul step whose execution does not affect the model however, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement a nul step within the three dimensional modeling apparatus of Hatanaka in order to act as a, "wait" command allowing the processor to idle regeneration for a certain amount of time, which is well known in the computing art especially in computer programming.

In reference to claim 26, Hatanaka discloses all of the claim limitations as applied to claim 18 above, in addition, Hatanaka discloses a plurality of functions contained in a table of the generation relationship data where a modifying function is chosen to be executed (see column 8, lines 8-12 and column 9, lines 57-67).

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In reference to claim 27, Hatanaka discloses all of the claim limitations as applied to claim 18 above, in addition, Hatanaka discloses executing modifying functions contained in the generation relationship data (see column 9, lines 57-67) however he does not explicitly disclose executing the steps of the first element before moving onto the next. It would have been obvious to one of ordinary skill in the art at the time the invention was made to execute the all steps of one element before moving onto the next element in such an associative modeling system of Hatanaka in order to finish processing on an element that the next element for processing might be associated with thus allowing for all changes made in the first element to be properly carried over to the next element.

4. Claims 4, 5, 15, 22, 28, 30 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatanaka (U.S. Patent 5,923,573) in view of Ardoin et al. (U.S. Patent 5,692,184). (Note further explanation pertaining to the rejections of these claims may refer to remarks found in the *Response to Arguments*, paper no. 8).

In reference to claims 4, 15, 22 and 28 Hatanaka discloses all of the claim limitations as applied to claims 1, 14 and 18, respectively, however Hatanaka does not explicitly disclose sorting the steps before execution. Ardoin et al. discloses an object relational management system for use in CAD software, where functions of nodes are ordered according to numeric values equivalent to comparator operators (see column 1, lines 28-31, column 8, lines 34-43 and Figure 16). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the sorting of elemental functions of Ardoin et al. with the modeling system of Hatanaka in order to compute functions of an element in the correct order because changing relationships could cause a change in order of functions (see column 8, lines 54-59 of Ardoin et al.).

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Note, in reference to page 16 of applicant's remarks, applicant argues that Ardoin et al. does not teach the sorting of steps before execution. The office interprets the nodes of Ardoin et al. to be substantially similar to steps as they, "can represent a value, an associative evaluation function..." because the associative functions are sorted upon dependency and equivalency relations (see #390 of Figure 16) which is substantially similar to applicant's sorting of steps (see pages 18-19 of applicant's specification).

In reference to claim 5, Hatanaka and Ardoin et al. disclose all of the claim limitations as applied to claim 4 above in addition, Ardoin et al. discloses the sorting of nodes in such a manner that a parent is evaluated before the child node (see column 8, lines 36-43). Note although Ardoin et al. does not explicitly disclose the use of a depth-first search sorting algorithm the office believes such a sort, disclose by Ardoin et al., to be equivalent in functionality especially in view of the disclosed sorting process of pages 18-19 of applicant's specification whereby, parent, child, grandchild, great-grandchild etc. steps are sorted.

In reference to claims 30 and 32, Hatanaka discloses modifying a "kit model" of a three-dimensional CAD system having elements such as points, curved lines and curved surfaces (see column 2, lines 7-18). Hatanaka also discloses identifying a change in an element by receiving modification information for moving or changing an element (see column 2, lines 30-32). Hatanaka discloses the relationship data of being utilized for model regeneration as it is used in supplying a generating method to the model regeneration function (see columns 7-8, lines 66-3). Therefore the limitation of claims 30 and 32, "...creating a first step..." is interpreted as the supplying or creation of a generating method, disclosed by Hatanaka, as the generation method is defined based



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upon the relationship data. Hatanaka also discloses when points, curved lines and curved surfaces of the model are moved or changed, other graphic elements which relate to the changed element are also modified (see column 7, lines 28-32). Note that the office believes that in using such related elements as in Hatanaka, it would have been obvious to one of ordinary skill in the art at the time the invention was made to change one or more elements to produce a model that accurately reflected the change to a first element because related modified elements would cause other related elements to be changed also. Hatanaka discloses executing modifying functions contained in the generation relationship data (see column 9, lines 57-67). Hatanaka does not explicitly disclose creating a second step based on the first step and the structure of one of the elements or the relationship between two of the elements however, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement a second step creation in the three dimensional modeling apparatus of Hatanaka in order to provide for other related elements to be modified which are based on the modification from the first created step (also, see claim 1 response to arguments above). Hatanaka does not explicitly disclose sorting the steps before execution. Ardoin et al. discloses an object relational management system for use in CAD software, where functions of nodes are ordered according to numeric values equivalent to comparator operators (see column 1, lines 28-31, column 8, lines 34-43 and Figure 16). Neither Hatanaka nor Ardoin et al. disclose sorting the steps to eliminate interference among steps however, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the sorting of elemental functions of Ardoin et al. with the modeling system of Hatanaka in order to compute functions of an element in the correct order because

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changing relationships could cause a change in order of functions thus sorted steps would eliminate the possibility of these changing relationships interfering (see column 8, lines 54-59 of Ardoin et al.).

5. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hatanaka (U.S. Patent 5,923,573) in view of Pabon (U.S. Patent 5,251,290).

In reference to claim 29, Hatanaka discloses all of the claim limitations as applied to claim 18, however Hatanaka does not explicitly disclose verifying the elements after execution for constraint satisfaction. Pabon discloses a method for geometric modeling where geometric modeling constraints are satisfied (see lines 1-23 of abstract). Although Pabon does not explicitly disclose satisfying constraints for element data it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement verifying constraint data after execution of steps in order to confirm that the elements are in the correct positions, orientations, and dimensions (see column 1, lines 19-22 of Pabon). Further, the technique of, verifying for constraint satisfaction is well known in the computer art for instance, verifying the necessary amount of disk space available for program installation.

6. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hatanaka (U.S. Patent 5,923,573) in view of Hollingsworth et al. (U.S. Patent 5,444,836).

In reference to claim 31, Hatanaka discloses a method of propagating changes made in one data element to other related elements (see column 7, lines 28-52). Hatanaka discloses the data structure of elements to include generation relationship data which retains information as to with which and how the geometric shape of elements are generated (see columns 7-8, lines 66-8). Note the office believes the data structure of

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Hatanaka provides a method for accumulating changes in an element. Hatanaka also discloses using a data network identifying possible sets of changes that may be made to related elements (see column 8, lines 57-67). Hatanaka does not explicitly disclose selecting the most appropriate set of changes by employing some predetermined standard however Hollingsworth et al. does. Hollingsworth et al. discloses methods for creating and applying flexible user defined rules for placement of graphical objects in a CAD system (see lines 1-3 of abstract). Hollingsworth et al. also discloses a method of selecting rules to apply changes to a model, by determining if the rules pass or fail an overplotting criteria wherein two objects are tested to see if they overplot one another (see column 10, lines 26-30). Hollingsworth et al. discloses selecting a next rule if the current rule would result in the disallowed overplotting according to an OMASK keyword statement (see column 11, lines 31-47). Note the office interprets the OMASK keyword statement substantially similar to the predetermined selection standard of applicant's claim. It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the generation of modification steps of Hatanaka with the rule based CAD system of Hollingsworth et al. in order to allow the CAD system to automatically and correctly place the desired graphical objects into desired locations without human intervention (see column 3, lines 30-34 of Hollingsworth et al.).

***Response to Arguments***

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7. Applicant's arguments, see pages 2-3, filed 6/9/2003, with respect to the disclosure have been fully considered and are persuasive. The objection of the disclosure has been withdrawn.

8. Applicant's arguments, see page 9, filed 6/9/2003, with respect to the drawings, in particular reference #144 of Figure 4 and #160-166 of Figures 5A-D, have been fully considered and are persuasive. The objection of the drawings has been withdrawn.

9. Applicant's arguments, see page 10, 1<sup>st</sup> paragraph, filed 6/9/2003, with respect to claims 1 and 4 have been fully considered and are persuasive. The objection of claims 1 and 4 has been withdrawn.

10. Applicant's arguments with respect to claims 1, 6, 7, 9-14, 17, 18, 20, 21, 23, 24 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Allowable Subject Matter***

11. Claim 25 is objected to as being dependent upon rejected base claims, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

In reference to claim 25, the prior art of record (Hatanaka (U.S. Patent 5,923,573), Ardoin et al. (U.S. Patent 5,692,184), Pabon (U.S. Patent 5,251,290) and Hollingsworth et al. (U.S. Patent 5,444,836)) does not disclose the plurality of steps being generated by prediction in combination with further limitations of it's parent claim 18.

#### ***Conclusion***

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Antonio Caschera whose telephone number is (703) 305-1391. The examiner can normally be reached Monday-Thursday and alternate Fridays between 7:00 AM and 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Mancuso, can be reached at (703)-305-3885.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

**or faxed to:**

**(703) 872-9314 (for Technology Center 2600 only)**

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

aac

8/6/03

  
JOSEPH MANCUSO  
PRIMARY EXAMINER